What is claimed:

1. A method for controlling a device capable of performing an operation in response to a job ticket, the operation being fulfilled by device options, the job ticket including desired properties, the method comprising:

a) comparing the desired properties with properties included in each option of the set of device capabilities options to determine sets of scoring factors, each set of scoring factors being associated with an option of the device capabilities options; and

b) performing the operation using an optimal option of the set of device capabilities options having a preferred set of scoring factors.

2. The method of claim 1 wherein the device is a printer.

3. The method of claim 1 wherein:

the comparing includes assigning one value to a scoring factor associated with a scored property of an option when said scored property is substantially identical to a corresponding property of the desired properties; and

the comparing includes assigning zero to the scoring factor when the scored property is not substantially identical to the corresponding property of the desired properties.

4. The method of claim 1 wherein:

desired properties are assigned ordinal numbers "i" and numerical weights W_i;

corresponding properties of said options are assigned the same ordinal numbers "i;"

the set of scoring factors associated with the one tree of scored properties includes scoring factors SF_i associated with the corresponding properties; and

additionally comprising accumulating a weighted sum $\sum_i SF_i * W_i$ to determine the optimal option.

5. The method of claim 1 wherein:

a desired property is assigned a numerical weight W_i;

the comparing includes assigning the numerical weight W_i to a scoring factor of one of the sets of scoring factors associated with a corresponding property when the corresponding property is substantially identical to the desired property; and

the comparing includes assigning zero to the scoring factor when the corresponding property is not substantially identical to the desired property.

6. The method of claim 1 wherein:

a desired property of the tree of desired properties is assigned a non-negative, monotone decreasing function V_i such that $V_i[0] = 1$; and

the comparing includes assigning $V_i[m_i]$ to a scoring factor associated with a corresponding property, where "m_i" is a measure between the corresponding property and the desired property.

7. The method of claim 1 wherein:

desired properties of the tree of desired properties are assigned ordinal numbers "i," numerical weights W_i, and non-negative, monotone decreasing functions V_i such that $V_i[0] = 1$;

corresponding properties are assigned the same ordinal numbers "i;"

for each corresponding property "i" of the corresponding properties, the comparing includes assigning $V_i[m_i]$ to a scoring factor "SF_i" of the sets of scoring factors associated with that corresponding property "i," where "m_i" is a measure between the desired property "i" and the corresponding property "i;" and

additionally accumulating scoring factors to obtain a weighted sum $\sum_i SF_i * W_i$.

8. The method of claim 1 wherein:

a desired property is assigned a numerical weight W_i and a non-negative, monotone decreasing function V_i such that $V_i[0] = 1$; and

the comparing includes assigning the product $W_i * V_i[m_i]$ to a scoring factor associated with a corresponding property, where "m_i" is a measure between the corresponding property and the desired property.

9. The method of claim 1 wherein:

a desired property of the tree of desired properties is assigned a variance factor k_i; and

the comparing includes assigning $k_i / [k_i + \Delta_i]$ to a scoring factor associated with a corresponding property, where "Δ_i" is an absolute value of the difference between the corresponding property and the desired property.

10. The method of claim 1 wherein:

desired properties of the tree of desired properties are assigned ordinal numbers "i," numerical weights W_i, and variance factors k_i;

for each corresponding property "i" of the corresponding properties, the comparing includes assigning $k_i / [k_i + \Delta_i]$ to a scoring factor "SF_i" of the sets of scoring factors associated with that corresponding property "i," where "Δ_i" is an absolute value of the difference between the desired property "i" and the corresponding property "i;" and

additionally comprising accumulating a weighted sum $\sum_i SF_i * W_i$.

11. The method of claim 1 wherein:

a desired property of the tree of desired properties is assigned a numerical weight W_i and a variance factor k_i; and

the comparing includes assigning the product $W_i * k_i / [k_i + \Delta_i]$ to a scoring factor associated with a corresponding property, where "Δ_i" is the absolute value of the difference between the corresponding property and the desired property.

12. The method of claim 1 wherein the accumulating includes adding scoring factors of each set of scoring factors.

13. The method of claim 1 wherein:

a tree of desired properties is constructed to include a desired property and desired subproperties, the desired property having a vertex within the tree of desired properties and the desired subproperties having subordinate vertices within the tree of desired properties;

the comparing includes comparing the desired subproperties with corresponding subproperties in corresponding vertices in trees of scored properties corresponding to different options to obtain sets of subordinate level scoring factors associated with the corresponding subproperties;

additionally accumulating the sets of subordinate level scoring factors to obtain parent scoring factors of the sets of scoring factors associated with corresponding properties in vertices of the trees of scored properties corresponding to the vertex of the desired property in the tree of desired properties; and

the accumulating further includes accumulating the parent scoring factors with other scoring factors in the sets of scoring factors.

14. The method of claim 1 wherein:

a tree of desired properties is constructed to include a desired property and desired subproperties, the desired property having a vertex within the tree of desired properties and the desired subproperties having subordinate vertices within the tree of desired properties, each desired subproperty being assigned an ordinal number "i" and a numerical weight W_i;

corresponding subproperties in corresponding vertices within a tree of scored properties of the trees of scored properties are assigned the same ordinal numbers "i;"

for each corresponding subproperty "i" of the corresponding subproperties, the comparing includes comparing the corresponding subproperty "i" with a desired subproperty "i" of the desired subproperties to obtain a subordinate level scoringfactor SF_i;

determining a weighted sum:

$$\frac{\sum_i SF_i * W_i}{\sum_i W_i}$$

to a parent scoring factor of the one set of scoring factors associated with the desired property; and

the determining further includes accumulating the parent scoring factor with other scoring factors.

15. The method of claim 1 wherein the optimal option is not a constrained option.

16. The method of claim 1 wherein the job ticket is defined by a tree of desired properties and each option of the device capabilities options is defined by a tree of scored properties that are compared with the desired properties.

17. A method for controlling an electronic printer capable of performing a print operation in response to a job ticket, the print operation being fulfilled by device capabilities options, the job ticket including a tree of desired properties and each option of the device capabilities options including a tree of scored properties, the method comprising:

a) comparing the tree of desired properties with the tree of scored properties included in each option of the set of device capabilities options to obtain sets of scoring factors, each set of scoring factors being associated with an option of the device capabilities options and each scoring factor of each set of scoring factors being associated with a property of one of the trees of scored properties;

b) performing linear combinations of each set of scoring factors to obtain a plurality of final scores, each final score of the plurality of final scores being associated with one option of the device capabilities options; and

c) performing the print operation using an optimal option of the plurality of device capabilities options associated with a preferred score of the plurality of final scores.

18. A computer readable medium containing instructions for controlling a device capable of performing an operation in response to a job ticket, the operation being fulfilled by device options, the job ticket including desired properties, comprising:

a) comparing the desired properties with properties included in each option of the set of device capabilities options to determine sets of scoring factors, each set of scoring factors being associated with an option of the device capabilities options; and

b) performing the operation using an optimal option of the set of device capabilities options having a preferred set of scoring factors.

19. The computer readable medium of claim 18 wherein the device is a printer.

20 The computer readable medium of claim 18 wherein:

the comparing includes assigning one value to a scoring factor associated with a scored property of an option when said scored property is substantially identical to a corresponding property of the desired properties; and

the comparing includes assigning zero to the scoring factor when the scored property is not substantially identical to the corresponding property of the desired properties.

21. The computer readable medium of claim 18 wherein:

desired properties are assigned ordinal numbers "i" and numerical weights W_i;

corresponding properties of said options are assigned the same ordinal numbers "i;"

the set of scoring factors associated with the one tree of scored properties includes scoring factors SF_i associated with the corresponding properties; and

additionally comprising accumulating a weighted sum $\sum_i SF_i * W_i$ to determine the optimal option.

22. The computer readable medium of claim 18 wherein:

a desired property is assigned a numerical weight W_i;

the comparing includes assigning the numerical weight W_i to a scoring factor of one of the sets of scoring factors associated with a corresponding property when the corresponding property is substantially identical to the desired property; and

the comparing includes assigning zero to the scoring factor when the corresponding property is not substantially identical to the desired property.

23. The computer readable medium of claim 18 wherein:

a desired property of the tree of desired properties is assigned a non-negative, monotone decreasing function V_i such that $V_i[0] = 1$; and

the comparing includes assigning $V_i[m_i]$ to a scoring factor associated with a corresponding property, where "m_i" is a measure between the corresponding property and the desired property.

24. The computer readable medium of claim 18 wherein:

desired properties of the tree of desired properties are assigned ordinal numbers "i," numerical weights W_i, and non-negative, monotone decreasing functions V_i such that $V_i[0] = 1$;

corresponding properties are assigned the same ordinal numbers "i;"

for each corresponding property "i" of the corresponding properties, the comparing includes assigning $V_i[m_i]$ to a scoring factor "SF_i" of the sets of scoring factors associated with that corresponding property "i," where "m_i" is a measure between the desired property "i" and the corresponding property "i;" and

additionally accumulating scoring factors to obtain a weighted sum $\sum_i SF_i * W_i$.

25. The computer readable medium of claim 18 wherein:

a desired property is assigned a numerical weight W_i and a non-negative, monotone decreasing function V_i such that $V_i[0] = 1$; and

the comparing includes assigning the product $W_i * V_i[m_i]$ to a scoring factor associated with a corresponding property, where "m_i" is a measure between the corresponding property and the desired property.

26. The computer readable medium of claim 18 wherein:

a desired property of the tree of desired properties is assigned a variance factor k_i; and

the comparing includes assigning $k_i / [k_i + \Delta_i]$ to a scoring factor associated with a corresponding property, where "Δ_i" is an absolute value of the difference between the corresponding property and the desired property.

27. The computer readable medium of claim 18 wherein:

desired properties of the tree of desired properties are assigned ordinal numbers "i," numerical weights W_i, and variance factors k_i;

for each corresponding property "i" of the corresponding properties, the comparing includes assigning $k_i / [k_i + \Delta_i]$ to a scoring factor "SF_i" of the sets of scoring factors associated with that corresponding property "i," where "Δ_i" is an absolute value of the difference between the desired property "i" and the corresponding property "i;" and

additionally comprising accumulating a weighted sum $\sum_i SF_i * W_i$.

28. The computer readable medium of claim 18 wherein:

a desired property of the tree of desired properties is assigned a numerical weight W_i and a variance factor k_i; and

the comparing includes assigning the product $W_i * k_i / [k_i + \Delta_i]$ to a scoring factor associated with a corresponding property, where "Δ_i" is the absolute value of the difference between the corresponding property and the desired property.

29. The computer readable medium of claim 18 wherein the accumulating includes adding scoring factors of each set of scoring factors.

30. The computer readable medium of claim 18 wherein:

a tree of desired properties is constructed to include a desired property and desired subproperties, the desired property having a vertex within the tree of desired properties and the desired subproperties having subordinate vertices within the tree of desired properties;

the comparing includes comparing the desired subproperties with corresponding subproperties in corresponding vertices in trees of scored properties corresponding to different options to obtain sets of subordinate level scoring factors associated with the corresponding subproperties;

additionally accumulating sets of subordinate level scoring factors to obtain parent scoring factors of the sets of scoring factors associated with corresponding properties in vertices of the trees of scored properties corresponding to the vertex of the desired property in the tree of desired properties; and

the accumulating further includes accumulating the parent scoring factors with other scoring factors in the sets of scoring factors.

31. The computer readable medium of claim 18 wherein:

a tree of desired properties is constructed to include a desired property and desired subproperties, the desired property having a vertex within the tree of desired properties and the desired subproperties having subordinate vertices within the tree of desired properties, each desired subproperty being assigned an ordinal number "i" and a numerical weight W_i;

corresponding subproperties in corresponding vertices within a tree of scored properties of the trees of scored properties are assigned the same ordinal numbers "i;"

for each corresponding subproperty "i" of the corresponding subproperties, the comparing includes comparing the corresponding subproperty "i" with a desired subproperty "i" of the desired subproperties to obtain a subordinate level scoringfactor SF_i;

determining a weighted sum:

$$\frac{\sum_i SF_i * W_i}{\sum_i W_i}$$

to a parent scoring factor of the one set of scoring factors associated with the desired property; and

the determining further includes accumulating the parent scoring factor with other scoring factors.

32 . The computer readable medium of claim 18 wherein the optimal option is not a constrained option.

33 The computer readable medium of claim 18 wherein the job ticket is defined by a tree of desired properties and each option of the device capabilities options is defined by a tree of scored properties that are compared with the desired properties. a) comparing the tree of desired properties with the tree of scored properties included in each option of the set of device capabilities options to obtain sets of scoring factors, each set of scoring factors being associated with an option of the device capabilities options and each scoring

factor of each set of scoring factors being associated with a property of a tree of the trees of scored properties;

b) accumulating each set of scoring factors to obtain a plurality of final scores, each final score of the plurality of final scores being associated with one option of the device capabilities options; and

c) performing the operation using an optimal option of the device capabilities options associated with a preferred score of the plurality of final scores.

34 A schema for determining device capabilities comprising:

a first data structure that defines the job requirements for a device task including desired properties and subproperties; and

a second data structure that defines a device capabilities option that is defined by a plurality of scored properties and subproperties nodes that are compared with the desired properties and subproperties of the job requirements data structure by traversing property and subproperty nodes of said second data structure and determining a score for each of said nodes and thereby allowing an option score to be calculated.

35. The schema of claim 34 wherein the second data structure is a tree structure with subproperty nodes beneath parent property nodes of said tree structure

36. A system for printing comprising a computer and a printer coupled by a communications path for transmitting data from the computer to said printer comprising a computing device associated with either the computer or the printer for:

a) comparing the desired properties of a print job ticket with properties included in each option of the set of print options to determine sets of scoring factors, each set of scoring factors being associated with a print option of a set of print options; and

b) performing printing using an optimal print option of the set of print options having a preferred scoring factor.

37. The system of claim 36 wherein the print job ticket is in the form of an XML document.

38. The system of claim 37 wherein the printer has constraints which are used by the computing device for limiting the optimal print option for a given print job ticket.

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